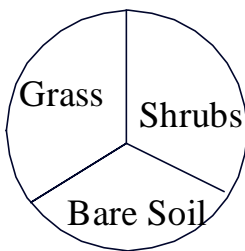




# THE COVEY HEADQUARTERS

Volume 14 Issue 1 Spring 2015

This newsletter is aimed at cooperators and sports-people in Missouri to provide information on restoring quail. This is a joint effort of the Missouri Department of Conservation, USDA-Natural Resources Conservation Service, and University of Missouri Extension. If you would like to be removed from this mailing list or have suggestions for future articles please contact [jeff.powelson@mdc.mo.gov](mailto:jeff.powelson@mdc.mo.gov) or 816-232-6555 x122 or write to the address shown.



The name of this newsletter is taken from an old concept.....that a quail covey operates from a headquarters (shrubby cover). If the rest of the covey's habitat needs are nearby, a covey should be present. We are encouraging landowners to manage their quail habitat according to this concept. Use **shrubs** as the cornerstone for your quail management efforts. Manage for a **diverse grass, broadleaf weed and legume mixture and provide bare ground** with row crops, food plots or light disking **right next to** the shrubby area.

## What About Pheasants? Scott Sudkamp, Small Game Coordinator, Sheldon, MO

An often-asked question I get from hunters and biologists alike is, "Why aren't there pheasants in my area?" This is usually followed up by, "Could the Department stock them here?" Probably anyone who's ever been on a good pheasant hunt can understand the interest that so many upland hunters have in establishing a huntable population close to home. There's nothing quite like a gaudy ring-neck exploding from the cover at your feet, cackling and cursing at your intrusion into his turf. But pheasants have a pretty limited range in Missouri, and that's not likely to change. I've heard many postulations over the years for why pheasants don't persist in most of the state – everything from high humidity to chiggers. The fact is that despite a lot of research, much uncertainty remains as to why pheasants can't thrive in many areas that appear to have good habitat. But we have gained some understanding through past studies, and this article will address some of the reasons why pheasants are where they are and aren't where they're not.

### History Lesson

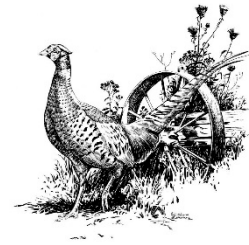
It's not known when pheasants were first introduced to the Show Me State. We know that they were successfully started out west in Oregon in the 1880s. They must have been started here shortly thereafter, because by 1895 Missouri had laws protecting "wild Chinese pheasants". By 1904, the state Game and Fish Department had begun releasing pheasants in hopes of establishing wild populations, and from 1904-1933, the state released over 40,000 birds. In addition, countless individuals and sportsman's clubs distributed eggs and live birds to interested landowners and released them on hunting areas they controlled. This even continues today on shooting preserves throughout the state, as the rules attached to the Game Bird Hunting Preserve Permit do not require released birds to be recaptured and many roosters and hens escape the guns and dogs pursuing them.

But despite the hundreds of thousands of pheasants that have been - and even continue to be - released, self-sustaining populations of this popular gamebird have been restricted to our northern few tiers of counties along the Iowa border, the northwest Missouri counties along the Missouri River, and until fairly recently, a few disjunct counties in eastern Missouri. The inability to establish breeding populations elsewhere in the state is surprising to many, since much of Missouri – especially north of the Missouri

River – looks very much like places pheasants are found in other Corn Belt states such as Iowa, Kansas, and South Dakota. So if the habitat appears suitable, then what's lacking?

### Soil Composition and the Pheasant Range

Considerable research was undertaken in the 1940s -1970s in an attempt to identify the factors responsible for determining the pheasant range. Ralph Yeatter noted in the 1940s that pheasants were rarely successful south of the 37<sup>th</sup> parallel, which might indicate an issue with heat intolerance. In fact, in looking at the source populations for those few pockets of *southern* birds that were self-sustaining, he found that they had come from more southerly latitudes in Asia, and so were likely more tolerant of the warmer temperatures. But attempts to establish pheasants in southern Illinois using California (more heat tolerant) stock ultimately failed.



Shortly after Yeatter's work, biologists began to look at soil characteristics and their correlation to pheasant distribution. Aldo Leopold had noted years before that pheasant distribution east of the Great Plains was mostly restricted to areas that had been covered by the Wisconsin glacier, about 10,000 years ago. This led many to suspect that the secret of the pheasant range had to do with minerals deposited in the soil when the glaciers receded, but that were missing or much less common south of the last glacial terminus. In particular, biologists looked at calcium levels in the soils where pheasants occurred and found that in fact these soils did tend to have much higher calcium levels than those outside of the pheasant range. But then why were bobwhites and prairie chickens able to thrive on the calcium-poor soils of the southern U.S.? Further research pointed to the fact that quail and prairie chickens tend to have more varied diets than pheasants, whose diets typically contain 85% or more cereal and large grains. This finding then spawned yet more study, and biologists found that while the pheasant diet is notably poor in calcium, they are quite adept at meeting their calcium needs through grit selection. In fact, it was found that even pheasants on poor soils were generally able to meet their calcium demands by choosing proper grit, and even during the nesting period when calcium demands peak, pheasants were able to meet their calcium needs through grit selection. Thus, the soil calcium theory lost its luster and left the researchers to look for other responsible factors.

With the discovery that pheasants could attain their calcium requirements even on poor soils, biologists began searching for other explanations for what was emerging as (and still is) a pretty static barrier to range expansion. The match-up between the bird's range and glaciation still seemed too interrelated to be just chance, so William Anderson, a scientist with the Illinois Natural History Survey looked at other soil elements for evidence of correlation with the pheasant range. He found that barium concentrations were considerably higher in the poor range, both in the soil as well as in the birds themselves. Some barium compounds are highly toxic, and it appeared that the pheasants outside the glacial boundaries might be getting poisoned. Yet this didn't explain why quail, prairie chickens, and other wildlife weren't affected. But remember from the earlier calcium studies that it had been determined that quail and prairie chickens had more diverse diets with higher year-round calcium supplies. It turns out that calcium can at least partly counteract the barium, so quail and chickens were safe but the pheasants with their low calcium diets (except during nesting season) were susceptible to it. But pheasants can select high-calcium grit, right? Yes, but it turns out that they only do select it in spring when their calcium needs are highest.

Still more work was done in regards to the barium-ingestion theory. A soil scientist at the University of Illinois determined that soils from the poor pheasant range tended to be lighter colored and contained significantly more concretions (hard or semi-hard accumulations of sediment into a larger particle) of elements that commonly co-occur with barium. It's speculated that pheasants on the poor range easily find and consume these dark colored barium-containing concretions against the lighter soils, and pheasants from poorer ranges are known to ingest considerably more grit. Once inside the gizzard, these concretions are then easily ground up, exposing birds to potentially toxic levels of barium. This theory has not been proven conclusively, but it does seem to have merit, particularly in light of the fact that pheasant mortality on high-barium areas tends to peak at the time of year when they are less selective about grit composition and don't purposely select high-calcium grit.

## **Other Factors**

In Missouri, Don Christisen headed up some pheasant research during the 1940s. What he found 70 years ago aligns closely with what we see today – namely than pheasants in Missouri are found primarily in the extreme northwestern and northern counties. He also found a thriving population of birds at the confluence of the Missouri and Mississippi Rivers in St. Charles County (more about this later). Christisen observed that there didn't seem to be any single factor that coincided with pheasant abundance and distribution, but he did note that two factors – climate and soil – seemed to play important roles (note: this was before some of the aforementioned work had been done).

Christisen stated that the most striking correlation of Missouri pheasant abundance was with highly fertile soils in the Wabash, Marshall, Shelby, and Knox series. These soils are very productive and well suited to agricultural production. Soils in these series are associated with glacial till, loess, and alluvial deposits. Furthermore, he noted that the best pheasant densities occurred on flat bottomland areas. This is likely due to the high fertility on these sites, but it was also noted that north Missouri pheasant densities were lower in highly dissected topographies with steep slopes and narrow ridges. In Wisconsin, Frederic Wagner and colleagues reported a similar relationship to topography, observing that the highest densities in the Badger State occurred on fairly flat, highly fertile soils, while pheasants struggled in parts of the state with steeper terrain or poor soils of sandstone origins.

Christisen also looked at the relationship between pheasants and climate, and found that the range of pheasants in NW Missouri was very closely associated with what was described as a sub-humid climate, while nearly all of the remainder of the state fell into the humid climate group. It is unknown whether higher humidity plays a role in limiting pheasant success, but a look at the North American range of the bird shows that they do tend to occupy portions of the continent with less-humid summers.

Another relationship was noted between pheasants and land use. Pheasants have long been associated with agricultural production. Wisconsin researchers noted that the best pheasant densities occurred where 55-70% of the land was under cultivation, with corn, oats, and hay making up about equal proportions. Likewise, Christisen noted that about 30% of the land base in the prime pheasant range in the 1940s was in corn, with a similar amount in alfalfa, which at the time provided very good nesting cover.

Of course, agricultural fields at that time were much different than what we find today. Today's fields have far fewer weeds due to GMO herbicide technology. Corn is harvested months earlier than it used to be, and cut fields are routinely fall plowed rather than left to winter as stubble. Alfalfa fields today are commonly sprayed with insecticides to kill weevils, but many non-target arthropods are killed as well, meaning less food is available for growing chicks. Also, alfalfa varieties have been developed that mature faster, meaning earlier and more frequent cuttings – a change with dire consequences for nesting hens. Acreage and percentage of crops has changed as well. Soybeans have replaced some corn and most small grain acres, and bean fields offer very little winter cover. Oats, a once-common small grain planted for horses and cattle, provided good nesting and brooding cover for pheasants. Today, it's virtually absent as a crop. Alfalfa, while still planted in northwest Missouri, is less common than it was historically. In Holt and Nodaway Counties alone, there was a 15,000 acre decline in alfalfa acres from 1945-2009.

## **Recent Population Declines**

As mentioned above, the distribution of pheasants in Missouri has changed very little since the 1940s. Until fairly recently, good populations could still be found in some locations in northwest Missouri, particularly on CRP, fallow ground, and conservation areas in the Missouri River floodplain. The very fertile soils and diverse plant communities in these areas created conditions that benefitted the birds, and their populations responded pretty well. But in the past 10 years, those populations have suffered significant losses. Frequent long-duration floods have been the norm in many of these areas recently, leaving little if any nesting and brood rearing cover to grow pheasants. Most private farms in these areas are levee-protected, but because they're so productive, they rarely are enrolled in conservation programs or otherwise managed to provide permanent cover. In 1940, St. Charles County (north St. Louis) reported excellent pheasant populations. The very fertile alluvial soils in the Missouri River/Mississippi River floodplain created good conditions for pheasants, and populations there persisted through the 1990s. But

since that time, frequent flooding and increased agricultural activities have changed available habitat, and staff on the Marais Temps Clair Conservation Area in the heart of their former St. Charles County range report that none have been observed for many years.

### **Summary**

While the ring-necked pheasant is still present in Missouri, its present numbers are considerably lower than those observed in previous decades. As a whole, the bird's range is not likely to expand beyond its historical bounds. Where it does persist, populations can be enhanced through purposeful management, but in terms of the overall population, numbers are not likely to show a long-term increase barring major habitat changes on the landscape.

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## **Updates Coming to MOre Quail Blog**

**Jason Sykes, Area Biologist, Palmyra, MO**

In the coming weeks, you should notice that the updates to the MOre Quail Blog will be more frequent and encompass a greater range of topics. The number of contributors will be expanded to include a range of resource professionals from around the state of Missouri, including managers of public areas, conservationists who work with private landowners, and researchers that try to answer the many questions we still have about quail and their management. While the focus of this blog will always be quail-centric, including habitat management, research trends, and news on the most recent publications, our new contributors will address a variety of topics related to wildlife, habitat management, and hunting.

Some topics to look for include:

- Timely updates on quail research in Missouri and throughout the country.
- Developments on programs, such as the myriad of Farm Bill programs, that can be used to manage and restore habitat.
- Information on current nesting, brood rearing, and fall population conditions from biologists and managers located throughout Missouri.
- The how and why of the many techniques we use to manage quail.
- Other topics related to the upland hunting experience and wildlife management, such as woodcock hunting, rabbit management, how managing for quail benefits other species, combining wildlife management and agriculture so that both profit, and many other topics.

If you haven't looked at the MOre Quail Blog in some time due to lack of updates, we hope you come back more regularly. We also hope that you tell and share this blog with family and friends (and strangers as well) who share your passion for Mr. Bob! Big things are coming! Don't miss any new posts! Follow the More Quail Blog on our **RSS feed** or get updates by **email**. You can also visit - <http://mdc.mo.gov/blogs/more-quail>

## Mark Your Calendar

**March 24, 2015 – Prescribed Burn Association Meeting – 7-9PM, Hagie's, Union, MO.** Contact Ryan Diener, 636-399-8733 for more information.

**March 28, 2015 – Prescribed Burn Cooperative Workshop – 11:30-1:30PM, Paris Community Center, 112 S. Main St., Paris, MO.** Want to use FIRE to manage your land, but need help? Joining a Burn Cooperative may be the answer! Follow the model being used in many neighboring states. Burn cooperatives can provide Equipment, Experience, and Manpower. Neighbors helping Neighbors. Contact Casey Bergthold, 573-823-0675 or Jamie Ebbesmeyer, 660-327-4117 ext. 115 to register.

**April 11, 2015 – Prescribed Burn Workshop – 9AM, Crowder State Park enclosed shelter house.** Come learn about the history, benefits, and behavior of fire. Classroom discussion with a hands-on demo burn to follow. Participants should bring leather gloves and leather boots. Materials, refreshments and lunch is provided. Registration is required by April 8<sup>th</sup>. Contact Scott Roy, 660-359-5685 ext. 114.

**April 11, 2015 – Prescribed Burn Workshop – 8AM-4PM, Lincoln County Health Department, #5 Health Department Drive, Troy, MO.** The morning will consist of classroom sessions followed by a demo burn in the afternoon (weather permitting). Registration is required. Call 636-528-4877 ext. 3 to register.

**April 22, 2015 - Pond Management Workshop, 5:30-8:30PM, Trails Regional Public Library, 432 North Holden St., Warrensburg, MO.** The workshop will cover all aspects of pond management such as fish stocking, fish management, vegetation control, and many common pond problems. This workshop is designed for anyone considering building a new pond or seeking advice for managing an existing pond. Light refreshments will be provided. Please RSVP by April 20 by calling 660-747-8200 ext. 117.

## On the Edge -

First published in 2003, the MDC publication *On the Edge – A Guide to Managing Land for Bobwhite Quail*, has recently been updated and expanded. In an age where on-line articles can change daily, or even hourly, a decade or more is a long time between updates to a hard copy publication. As the saying goes, though, good things come to those that wait!

While some of the chapters from the original publication remain, they have been edited and re-written to include the most recent research conducted in Missouri and the U.S. Almost 30 additional pages of information, pictures, and references have been added. Most of the pictures have been upgraded to recent high quality photographs that help demonstrate the wealth of information being conveyed. Numerous illustrations have been added to better explain important points. New insets throughout call attention to significant issues and information that all quail managers and hunters should know.

Four new chapters utilizing a step-by-step approach have re-organized information from the previous iteration or have been added. These new chapters cover how to assess your land's potential, how to apply practices that have been proven to improve the habitat on most properties, evaluating and fine-tuning your management, and tracking quail numbers.

All-in-all, the revamped *On the Edge* publication demonstrates why quail live, and thrive, on the edge(s), and why the bobwhite quail population as a whole is on the edge (of a very steep cliff). The information it provides, though, shows that although we might never see the 'glory days' of quail hunting again where just about every farm had a few coveys on the back forty, we can at least get glimpses of it. Even the most experienced quail hunter and manager is sure to pick up a few golden nuggets of information.

Copies of the new *On the Edge – A Guide to Managing Land for Bobwhite Quail* will begin to be available at MDC booths and events in 2015 or by visiting your local MDC office. To find out who to contact near you, go to [www.mdc.mo.gov](http://www.mdc.mo.gov) and use the 'Who's My Local Contact?' search function.

## Are you using the right cut stump herbicide?

Steve Hoel, Private Land Conservationist, Warrensburg, MO

*Disclaimer: I am not an expert in all herbicides. Always read and follow the safety and application guidelines from the herbicide manufacturer.*

It's the time of year that many of us grab the chainsaw and set off to complete some late winter habitat work. On my property, winter chainsaw work includes killing trees that have begun to invade grassland areas. Along with the saw and personal protective equipment, I always take along a herbicide to prevent re-sprouting. One day, I followed my own advice and decided to fully read the herbicide label. To my surprise, according to the label, I was using the wrong herbicide for the species I wanted to kill.



It seems like the *go-to* cut stump herbicide is Tordon® RTU (5.4% Picloram and 20.9% 2,4-d). It comes in a convenient ready to use (RTU) formulation in a handy one quart bottle with an applicator tip. Pathway® is the same chemical combination as Tordon® RTU, but comes in a 2.5 gallon container. If you don't mind refilling applicators, you can save a few dollars by buying Pathway®. Tordon® RTU and Pathway® should be applied to the outer cambium layer of the freshly cut stump to prevent re-sprouting.

Tordon® RTU/Pathway® are labeled to control many species, but take note that two of the most common problem trees, Osage orange and honey locust, are not on the label. I'm not saying that Tordon® RTU has not been used to kill these species, but it's not labeled by the manufacturer to do the job.

I have a real problem with invading Osage orange and honey locust, so I began to search herbicide labels to find a product that was tested to control both species. In addition, I wanted to find a versatile, inexpensive, and readily available herbicide that I could purchase without a pesticide applicator's license. After considering all of the variables for my situation, I settled on Remedy® Ultra herbicide (60.45% Triclopyr). According to the label, Remedy® Ultra controls Osage orange, locust, and many other species.

For cut-stump use, Remedy® Ultra needs to be mixed with a commercial basal oil or other oil-based carrier, such as diesel fuel, fuel oil, or kerosene. After mixing, the product should be applied to the outer cambium as well as the exposed stump and root collar area. This effort requires a bit more herbicide than using a product like Tordon® RTU, but it can be quickly accomplished using a pressurized hand sprayer like this [one-liter hand sprayer made by Solo](#). Note that the basal oil or oil-based carriers can be hard on a sprayer's seals and O-rings. Be sure to select a sprayer that can handle these products. When mixed according to the label directions for cut-stump use, the final product will include around 15% of the active ingredient, Triclopyr. Conveniently, this same mixture can also be used for a basal bark application. This is a way to control small (<6" diameter) individual woody plants by applying herbicide to the circumference of the lower 12-15" of outer bark and root collar. This method is great for killing small individual woody plants without using a chainsaw.

If mixing herbicide is not your thing, you can use an herbicide called Pathfinder® II (13.6% Triclopyr). It is a ready to use product that is premixed with a basal oil. It is designed for both cut-stump and basal bark applications, just like the Remedy® Ultra mix above. One difference is that Pathfinder® II is actually labeled to control more species than Remedy® Ultra.



One additional feature of Remedy® Ultra is the fact that I can use it in two other ways during the growing season. When mixed with water according to the label directions, it can control woody plants with a foliar (leaf surface) herbicide application. I also use it to control sericea lespedeza and other broadleaf plants.

This brief article can only scratch the surface on herbicide selection and use. Each person's situation is different, so you should consult your chemical supplier and the herbicide labels to select the correct product. I am not promoting one herbicide over another, but only describing my personal experience in selecting and using herbicides for my situation. You may find similar herbicides that will better suit your personal situation. No matter what herbicide you use, I encourage you to carefully read and follow herbicide labels. [CDMS' Agro-chemical Database](#) makes it easy to locate just about any herbicide label.

## **Spring Covey Headquarter Calendar**

### **March**

Spray brome and fescue adjacent and underneath shrub thickets, edge feathering, and downed tree structures.

Drop honey locust and hedge trees in fencelines for quail covey headquarters. Don't forget to spray the stumps.

Burn your warm-season grass CRP fields by March 15<sup>th</sup>.

Disk grassland acres this month to promote broadleaf weeds.

Overseed legumes after light disking or prescribed burning.

Order your covey headquarter shrubs from MDC's State Nursery - [mdc.mo.gov/node/4011](http://mdc.mo.gov/node/4011)

Be ready when your shrub seedlings arrive. If planting into brome or fescue, spray with glyphosate.

### **April**

DO NOT BURN native grasses this month if managing for quail, wait until fall.

Burn fescue and brome to severely stunt grass, then light disk or interseed legumes.

Till and fertilize food plots.

Burn or chemically treat cool-season CRP by end of the month.

Youth turkey season – April 11-12.

### **May**

Listen for male whistle calls on clear calm mornings.

Conduct breeding bird counts.

Plant food plots this month for best results.

Nesting season begins for quail and most grassland birds – DO NOT MOW roadsides, old fields, and odd areas.

Clip weeds in newly planted native warm-season grasses to a height of 4-6 inches.

## **Use GovDelivery to get your copy of The Covey Headquarter Newsletter**

The Missouri Department of Conservation (MDC) is upgrading their electronic subscription lists to better help you stay informed about conservation news you want. The new service, GovDelivery, will allow you to manage your subscriptions by topics and regional locations. Those of you that currently receive electronic updates from MDC have had your current subscriptions transferred to the new service.

You can review and update your subscriptions at <http://mdc.mo.gov/govdelivery>. You will need to enter your email address or mobile phone number to change or cancel your subscriptions. For those of you that receive the paper copy of the Covey Headquarters Newsletter and would like to get it electronically, visit the above website. By signing up for this new service, you will receive the quarterly newsletter as well as periodic updates on quail biology and management. Currently over 4,000 people are having their Covey Headquarter Newsletter delivered this way.

## Food Plot Seeding Rates

Food is seldom a limiting factor to having bobwhites on your farm. Make sure you have adequate herbaceous cover (diverse grasses, legumes, wildflowers and weeds for nesting, feeding, brood-rearing and roosting), and shrubby cover before planting food plots.

Species	Broadcast seeding rate (lbs./acre)	Planting Time
Grain or Forage Sorghum	16 lbs.	May – early June
Corn	15 lbs.	April – early May
Millet	20 lbs.	April – June
Buckwheat	40 lbs.	May – June
Soybeans	45 lbs.	April – May
Oats	50 lbs.	Fall – early spring
Wheat	50 lbs.	September – early November
Sunflowers	8 lbs.	April – early June
“Bobwhite” trailing soybeans	8 lbs.	April – May

- Rates can be reduced 50% for planting or drilling, except for soybeans, which can be reduced to 34-40 pounds/acre.
- Fertilize grain plots according to soil test. In the absence of a test, consider adding 150 pounds of 12-12-12 fertilizer per quarter acre of food plot

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